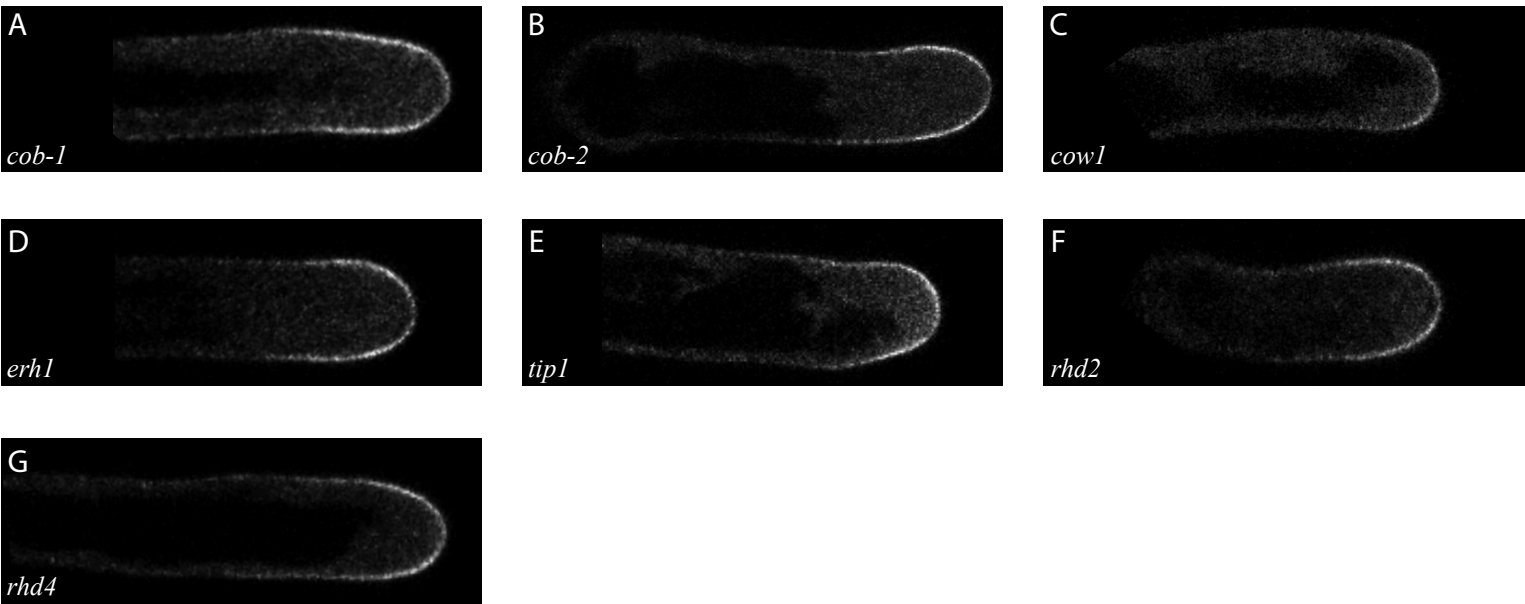
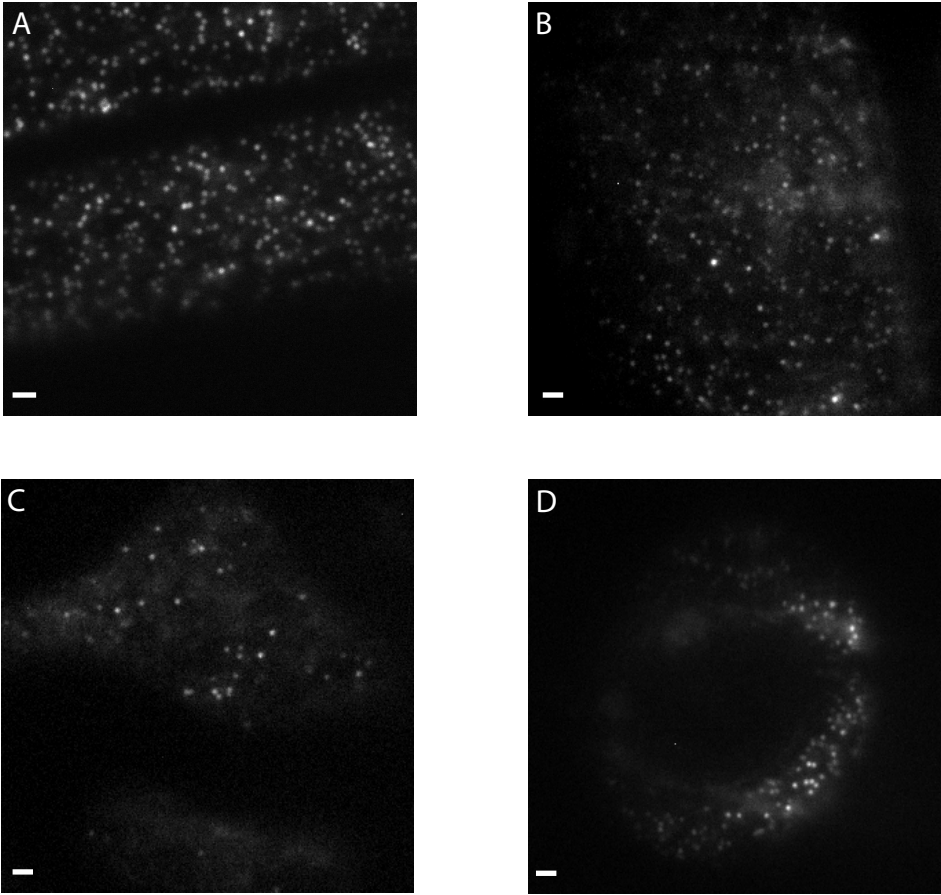


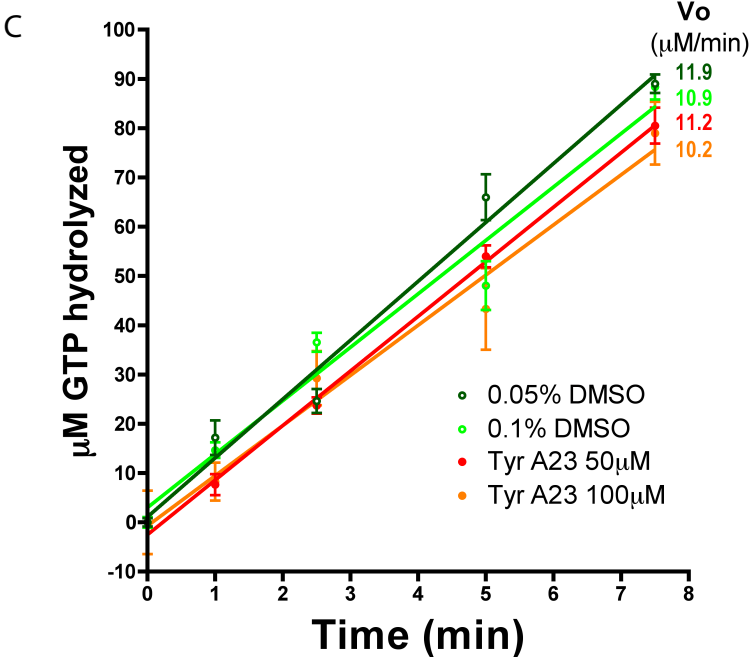
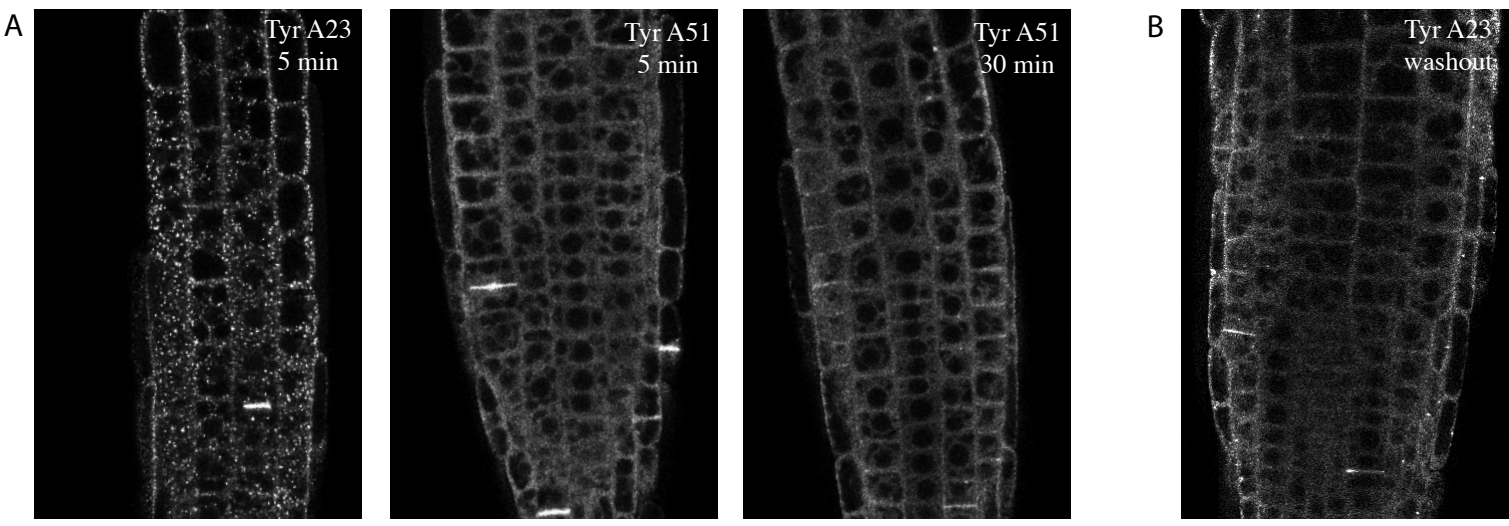
Supplemental Figure 1. DRP1C localizes to the plasma membrane in hypocotyls and does not associate with mitochondria. (A) Confocal section of a hypocotyl expressing DRP1-GFP (green). (B-C) Medial (B) and cortical (C) confocal section of an epidermal root cell expressing DRP1C-GFP (green) and incubated with 1 μ M MitoTracker Orange (red). (D) Medial confocal section of cortex cells of ss- β -ATPase-GFP (red) expressing roots, fixed and probed with α -DRP1C (green). Bars = 10 μ m.



Supplemental Figure 2. DRP1C-GFP retains its tip localization in several root hair expansion mutants. DRP1C-GFP was introgressed into several previously described root hair mutants and imaged by LSCM. Only actively growing root hairs were selected for imaging. (A) *cob-1* (B) *cob-2* (C) *cow1* (D) *erh1* (E) *tip1* (F) *rhb2* (G) *rhb4*.



Supplemental figure 3: DRP1C-GFP forms cortical foci in various epidermal cells. Seedlings expressing DRP1C-GFP were imaged by VAEM. (A) Mature atrichoblast (B) Hypocotyl epidermal cells (C) Cotyledon leaf pavement cell. (D) Cotyledon guard cell. Scale bars = 1 μ m



Supplemental Figure 4. TyrA23, but not TyrA51, reversibly inhibits DRP1C dynamics *in vivo*, but not DRP1 GTPase activity *in vitro*. (A) Roots expressing DRP1C-GFP were submerged in 50 μ M tyrphostin A23 or A51 for 5 min or 30 min and then imaged in the presence of the inhibitor. (B) Roots expressing DRP1C-GFP were submerged in 50 μ M tyrphostin A23 for 30 min then transferred to media without drug for 5 min before imaging. (C) Purified recombinant Maltose Binding Protein-DRP1A (0.5 μ M) was incubated at room temperature with GTP (0.5 mM) in buffer containing DMSO or Tyrphostin A23, as indicated. GTP hydrolysis was determined by colorimetric detection of released phosphate. Hydrolyzed GTP (mean \pm SD, N=5) was plotted against time and Vo was calculated from the best fit line.